

REMARKS

The office action dated February 14, 2003 has been carefully reviewed and these remarks are responsive thereto. Reconsideration and allowance of the instant application are respectfully requested.

Claims 1-4, 8-9, 13-16 and 21-43 remain pending in this application. Claims 8, 13-14, 21-25 and 28-30 have been amended. Claims 5-7, 10-12 and 17-20 have been canceled without prejudice or disclaimer, and new claims 31-43 have been added. Support for these amendments can be found in the claims as originally filed and throughout the specification. No new matter has been added.

Objection to the Specification

The disclosure is objected to as not identifying patents in the relevant art. Pursuant to the Examiner's suggestion, the specification at page 3, lines 3-5 has been amended to properly identify patents relating to fertilizer compositions and to correct a typographical error.

Information Disclosure Statement

An Information Disclosure Statement with accompanying PTO Form PTO/SB/08A is submitted herewith to list one of the references included in the specification that was inadvertently not listed on the previously submitted Information Disclosure Statement.

Claim Rejections Under 35 U.S.C. §112

Claims 21-24 are rejected under 35 U.S.C. § 112, second paragraph. Pursuant to the Examiner's suggestion, "nominal" composition in the claims has been amended to "nitrogen—phosphorus—potassium" composition to more clearly point out the claimed subject matter.

Claim Rejections Under 35 U.S.C. §102

Claims 1-3 stand rejected as anticipated by Hsu (U.S. Patent No. 5,865,870). This rejection is respectfully traversed.

Hsu relates to a fertilizer having both $\text{PO}_4\text{-P}$ and $\text{PO}_3\text{-P}$ to provide a synergistic effect of $\text{PO}_4\text{-P}$ and $\text{PO}_3\text{-P}$ on plant growth and uptake of phosphorus by plants. The fertilizer of Hsu is prepared by mixing (a) phosphorous acid or its salts with either (b) polyphosphoric acid and its salts or (c) phosphoric acid and its salts. Hsu discloses that the weight ratio of $\text{PO}_4\text{-P}$ to $\text{PO}_3\text{-P}$ ranges from 1:20 to 20:1.

Claims 1-3 are directed to a concentrated nitrogen and phosphorus fertilizer that includes an ammonium phosphite composition having nitrogen in a range of about 6 to 12 weight percent and phosphorus (as phosphite ion in solution) in a range of about 32 to 36 weight percent. Claims 2 and 3, which both depend from claim 1, require that the nitrogen and phosphorus fertilizer composition also includes an ammonium phosphate compound.

Hsu does not teach the composition of ammonium phosphite having the claimed weight ranges of nitrogen and phosphorus. Instead, Hsu simply discloses that ammonium phosphite is one of the salts of phosphorous acid that can be used as one component of a phosphorus fertilizer. Hsu further discloses that the salts of phosphoric acid and the salts of polyphosphoric acid include ammonium phosphate and ammonium polyphosphate, respectively. Hsu teaches that the phosphorous acid or its salts is used in combination with either the phosphoric acid and its salts or the polyphosphoric acid and its salts. Hsu does not teach the relative amounts of nitrogen and phosphorus in the fertilizer composition, let alone any specific amount of nitrogen, but only the relative amounts of phosphite and phosphate. Furthermore, none of the compositions of the examples of Hsu disclose use of a compound that includes ammonium. Thus, Hsu does not teach each element of the claimed invention as required under 35 U.S.C. §102(b).

Claim Rejections Under 35 U.S.C. §103

Claims 4-30 stand rejected as unpatentable over Hsu and Taylor (U.S. Patent No. 5,800,837). This rejection is respectfully traversed. The cited documents, either alone or in combination, do not disclose, teach or suggest the invention claimed in claims 4-30 or new claims 31-43.

The presently claimed invention is directed to a nitrogen and phosphorus fertilizer and to methods of making and using the same. The fertilizer includes a source of nitrogen in an amount of about 6-12 wt% and a source of phosphorus in an amount of about 22-36 wt%. The phosphorus comprises phosphite ion in solution. The fertilizer may include ammonia, phosphorous acid and water and may also include a source of phosphate. Importantly, the amount of phosphate present in the fertilizer is no more than the amount of phosphite present in the fertilizer. Additionally, as demonstrated by applicant's efficacy testing, the results of which

are presented at pages 15-17 of the application, the particular combination of nitrogen and phosphorus as claimed surprisingly provides improved growth results. In making the fertilizer, the temperature is maintained at below about 150°F, and the pH is maintained at between about 5 to about 8.

The Office Action states at page 4 that “since Hsu teaches a mixture of ammonium phosphite and ammonium polyphosphate or phosphate also, and the ratio shown therein encompasses those claimed, then per cent amounts of N and P must also be the same or similar” and further that “Hsu teaches that the combination claimed herein is said to have a synergistic effect on plant growth...and this is motivation enough not only to make such a combination but to optimize within the range shown, as needed.”

As discussed above, Hsu does not disclose, teach or suggest a fertilizer that includes a nitrogen compound in any given amount, including the relative amounts claimed in the present invention. Although Hsu may disclose use of ammonium phosphite and ammonium polyphosphate or ammonium phosphate, the relative amounts of N and P are not the same as or similar to the amounts in the claimed fertilizer, which includes a nitrogen compound separate from phosphorous acid. Therefore, although Hsu may teach that the combination of phosphorous acid with either phosphoric acid or polyphosphoric acid provides a synergistic effect, Hsu does not disclose, teach or suggest a nitrogen and phosphorus fertilizer having a combination of nitrogen and phosphorus in the claimed ranges. One of skill in the art following the teaching of Hsu would not be motivated to modify the amount of nitrogen based on Hsu's teaching of the amounts of phosphite and phosphate. Accordingly, the present claims are not obvious in view of Hsu.

Claims 10, 17 and 19 have been canceled. The rejection of these claims based on Hsu in view of Taylor is moot and withdrawal is requested. With respect to pending claims 4, 8-9, 13-16 and 21-43, Taylor does not disclose, teach or suggest a nitrogen and phosphorus fertilizer having nitrogen and phosphorus in the claimed ranges. Furthermore, the examples of Taylor are all directed to use of fertilizers that comprise potassium salts without any nitrogen source. Thus, Taylor does not teach or suggest the presently claimed invention.

Claim 28 also stands rejected as unpatentable over Hsu in view of Sheppardson et al. (US 2002/0129632) and RU 2121990. This rejection is respectfully traversed. The cited documents, either alone or in combination, do not disclose, teach or suggest the invention claimed in claim 28 or any of claims 4-43.

As discussed above, Hsu does not disclose, teach or suggest a fertilizer that includes an additional nitrogen component in any amounts, including the relative amounts claimed in the present invention, or a fertilizer having ammonium nitrate as a nitrogen source.

Sheppardson et al. do not provide any teachings for curing the deficiencies of Hsu. Sheppardson et al relates to an aqueous suspension fertilizer composition that includes a suspension agent to prevent undissolved solids in substantially homogeneous suspension. It does not disclose, teach or suggest the combination of nitrogen and phosphorus in the claimed ranges. Furthermore, Sheppardson et al. do not recognize the significance of any particular amount of nitrogen in the fertilizer inasmuch as they disclose that "[t]he nitrogen source may comprise from 0% to a weight equal to or greater than that of the phosphorus-containing acid or salt in the suspension fertilizer composition." (Page 3, para. 0054). Thus, Sheppardson does not teach or suggest the claimed invention.

RU 2121990 teaches away from the claimed invention in that it discloses a significantly lower amount of phosphorus as P_2O_5 relative to the amount of nitrogen ($N:P_2O_5$ is 1:(0.04-0.7)), in contrast to the claimed invention where the amount of phosphorus (about 22-36wt%) is greater than the amount of nitrogen (about 6-12 wt%). Furthermore, the process temperature of RU 2121990 (70-105°C or 158-221°F) is greater than the claimed temperature of less than about 150°F. Thus, RU 2121990 does not teach or suggest the claimed invention.

Therefore, none of the cited references, whether taken alone or in combination, disclose, teach or even suggest the presently claimed invention, and the present claims are not obvious.

CONCLUSION

In view of the above amendments and remarks, prompt reconsideration and full allowance of the claims pending in the subject application are respectfully requested. All

Appln. No.: 09/898,424
Amendment dated May 14, 2003
Reply to Office Action of February 14, 2003

rejections having been addressed, applicant respectfully submits that the instant application is in condition for allowance, and respectfully solicits prompt notification of the same.

It is believed that no fee is required for this submission. If any fees are required or if an overpayment is made, the Commissioner is authorized to debit or credit our Deposit Account No. 19-0733, accordingly.

Respectfully submitted,

BANNER & WITCOFF, LTD.

Dated: May 14, 2003

By:



Rebecca P. Rokos
Registration No. 42,109

Banner & Witcoff, Ltd.
10 S. Wacker Drive, Suite 3000
Chicago, Illinois 60606
Tel: (312) 463-5000
Fax: (312) 463-5001